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Comment on the milliped genus *Eiphorus* Chamberlin,1951 (Diplopoda: Spirostreptidae)

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ABSTRACT

The genus *Eiphorus* is examined from both specimens and literature information, and considered to be valid and monotypic. The type species *E. phanus* Chamberlin, 1951, is shown to be a subjective junior synonym of *Synophryostreptus incertus* Attems, 1935, of uncertain generic identity. The convoluted history of both names is summarized, some important anatomical features are discussed and illustrated, and a distribution map is also given. A sister-group taxon cannot be identified with present information.

A large number of spirostreptid genera were proposed by R. V. Chamberlin during the course of his publications on miscellaneous collections of millipeds from tropical regions. Despite the generally superficial treatment accorded these new taxa, a large number of them are fortuitously valid by default, for the reason that Chamberlin was the first person to describe myriapod material from many remote areas.

Among the more interesting of Chamberlin's new African genera is *Eiphorus*, proposed in 1951 for the single species *E. phanus* from northeastern Angola. This genus was stated by its author to be "...related most closely to the genus *Kastinikus* [*sic! = Kartinikus*] of Cameroun and South Africa" but the rationale for this opinion was not stated. Recently having had the opportunity to examine pertinent material in the collections of both Attems (Naturhistorisches Museum, Wien) and Chamberlin (U. S. National Museum, Washington), I found it possible to contribute something to the knowledge of this genus which now appears to be monotypic. My previous

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(1980: 93) statement that *Eiphorus* contains about five species was an error based on a misconception of the generic characters. As noted beyond, *Eiphorus* is rather disjunct and until some other genera are studied more closely, especially as regards mouthparts, it will not be possible to postulate a 'sister-group' for it with any confidence. Perhaps the information given here will suggest some clues for others to consider.

Eiphorus.

Eiphorus Chamberlin, 1951, Publ. Cult. Companh. Diam. Angola, no. 10, p. 88. Proposed with a new species. Type species: *E. phanus* Chamberlin, by monotypy and original designation. -- Krabbe, 1982, Abh. Naturw. Verein Hamburg, NF, no. 24, p. 139.

DIAGNOSIS: Moderately large, slender, spirostreptids (length to 170 mm), with 70-71 segments. Ocellaria very large (Fig. 1), with 88 ocelli in 9 series (15-14-13-12-10-9-7-5-3), separated by a space only equal to four ocelli (= 26% of an ocellarial length); antennae unmodified. Gnathal lobe of mandible with 14(15) pectinate lamellae; margin of sectile sclerite completely smooth with no trace of lobes (Fig. 2). Ventral surface of mandibular stipe with an oval membranous subapical convexity. Gnathochilarium (Fig. 3) of normal shape, stipes with distinct *membranous* surface around distal megaseta and two small isolated fields of short setae; lingual lamellae with the usual distal setae and an oblique subbasal row of 6 or 7 setae; mentum completely glabrous; prebasilar plate reduced to a large median and two smaller lateral sclerites widely separated by membrane. Hypostome with a small subtriangular median projection. First pair of legs (illustrated by Krabbe, 1982: fig. 133) of typical form, oral surface of coxal region with numerous dispersed setae, prefemoral projection of modest size, subtriangular in form, prefemur *per se* with a few minute setae near midlength. Collum of male moderately produced anteroventrad (Fig.4), with two or three sinuously curved sulci. Body segments without modifications, metazona very slightly larger than prozona, the surface smooth but finely and densely punctate; prozona with about 15 concentric striae spaced increasingly wider posteriad, surface smooth with isodiametric mesh texture except between segmental stricture and last striae which is punctate like metazona. Sigilla variable in size and shape, in a single row. Sterna smooth. Posterior coxal sockets open Legs long (length greater than body diameter), male with tibial and postfemoral pads except on last 15-16 pairs. Paraprocts without submarginal groove, not re-entrant.

Gonopods (Fig. 5) of normal spirostreptid form, but with sclerotized, trapezoidal sternum coalesced with base of metaplicae; paracoxites relatively small, sigmoidally reflexed (Fig. 6). Apex of proplica (anterior coxal fold) moderately setose, rounded. Apex of metaplica (=posterior coxal fold) rounded, produced laterad into an elongate cone. Telopodite (Fig. 7) long and slender, region of torsion located far distad near

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center of curvature ("Knee") and, like the origin of antetorsal process, concealed in anterior aspect by apex of anterior paragonocoel. Torsotope extended (Fig. 8), antetorsal process long, simple, slightly curved parallel to main shaft of telopodite. Latter with large, flat, laminate, marginally transparent subapical lobe. Telopodites at rest held on anterior side of gonopods, their apices overlapping in front of sternum.

SPECIES: Only one is recognized at prersent.

DISTRIBUTION: Zaire; northern Angola (Fig. 9).

COMMENTS: The generic position of *E. incertus* has been perplexing since the species was published: even the name seems particularly appropriate. Attems wrote "Diese Art gehört zweifellos in die kleine Gruppe der artenarmen Gattungen *Globanus, Synophryostreptus, Kartinikus* und *Aulonopygus*, passt aber so gut in keine dieser Gattung hinein, so dass ich sie nur mit einigem Vorbehalt zur Gattung *Synophryostreptus* stelle; ich scheue mich, eine neue Gattung für diese Art aufzustellen, da es ja sonst wirklich dazu kommt, dass wir für jede Art eine eigene Gattung haben. Bis dass mehr Arten aus dieser Gruppen bekannt sind, werden wir vielleicht leichter ihre naturliche Verwandschaft erkennen und besser den Umfang der Gattung bestimmen konnen."

This doubt beset Attems for a long time and he changed his mind frequently. Specimens in his collection at Vienna stand under three generic names: *Kartinikus, Synophryostreptus*, and *Doratogonus*, sometimes all three names are on labels in one bottle.

Chamberlin (1951: 88) expressed the view that *Eiphorus* was most closely related to *Kartinikus*, without stating any particular evidence and without reference to Attems' earlier opinion. He had studied two male specimens, of which I have seen the male paratype, and it is an astonishing coincidence that the right telopodite in this specimen is deflected in almost exactly the same way as drawn by Attems in the original description of *incertus*. Not long afterwards, Kraus (1958: 67) studied material identified by him as *phanus* and stated his conviction that "*Eiphorus* ist ein sicheres Synonym von *Kartinikus*". But in the same year, he (1958: 39) listed the species name *incertus* in *Doratogonus*, obviously unaware that *incertus* and *phanus* represent a single species. Perhaps he was just following Attems' 1950 allocation.

Demange (1970: 376) admitted *Eiphorus* as valid but referred it to the status of "uncertain" genera. This position was essentially taken by the most recent commentator on the subject (Krabbe, 1982: 139), who thought substantial differences in details could be adduced for separation of *Eiphorus* from *Kartinikus*, but did not actually specify sister-group status for the two.

As noted above, I am not able at present to establish the nearest relatives of *Eiphorus*. Of the several possibilities invoked by previous authors, both *Synophrystreptus* and *Globanus* may be disqualified at once because of the normal

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position of the torsate region well **distad** of the flexure. Remaining are *Kartinikus* and *Aulonopygus*, both with the torsus located at or even proximad to the flexure. Both of these genera contain, however, species which are much smaller than *E. incertus*, with much lower segment numbers (49-56 as opposed to 70), smaller ocellaria, and smaller legs. The structure of their mouthparts remains unknown to me. On balance, a close affinity of either with *Eiphorus* seems unlikely. The significance of the notably proximal torsus is uncertain. It might be a primitive character or an independently evolved specialization: outgroup comparison offers no insights on this point, but the condition is extremely rare within the Spirostreptidae itself.

Throughout the erratic history of *Eiphorus* the status of *phanus* was not questioned or discussed by anyone. It continued to co-exist in the literature with *incertus*, which was transferred from *Synophryostreptus* to *Doratogonus* by Kraus (1958b) - possibly on the basis of an Attemsian identification label - and then into *Kartinikus*, with some reservation, by Krabbe (1982: 140). The parallel histories and separate identities of *incertus* and *phanus* can now be terminated by the merger proposed herewith.

Eiphorus incertus (Attems), new combination
(Figs. 1-8)

1935. *Synophryostreptus incertus* Attems, Rev. Zool. Bot. afr., vol. 26, p.193, fig. 42. Numerous syntypes (MRAC) from seven localities (details in a subsequent paragraph), neither holotype nor type locality was indicated and a lectotype has yet to be selected..

1937. *Synophryostreptus incertus*: Attems, Explor. Parc Nat. Albert, vol. 2, part 2, p. 15.

1950. *Doratogonus incertus*: Attems, Ann. Naturh. Mus. Wien, vol. 57, p. 189.

1951. *Eiphorus phanus*: Chamberlin, Publ. Cult. Comph. Diam. Angola, nr.10, p. 88, figs. 54, 55. Holotype male (USNM) from Dundo, Angola, A. de Barros Machado leg. October 1946. **New Synonymy!**

1958. *Doratogonus incertus*: Kraus, Explor. Parc Nat. Upemba, pt. 54, p. 39.

1958. *Kartinikus phanus*: Kraus, Publ. Cult. Comph. Diam. Angola, nr. 38, p. 67.

1982. *Eiphorus phanus*: Krabbe, Abh. Naturw. Ver. Hamburg, NF, vol. 24, p. 139, figs.133a-c.

1982. *Kartinikus (?) incertus*: Krabbe, op. cit, p. 425.

Comparison of the type material of *E. phanus* with the published account of *incertus* and specimens so identified by Attems, convinces me – as did the original accounts of the two names – that only a single species is involved. Eventual selection of a lectotype from Attems' numerous syntypes of *incertus* will also establish the restricted type locality. As I see no appreciable geographic variation

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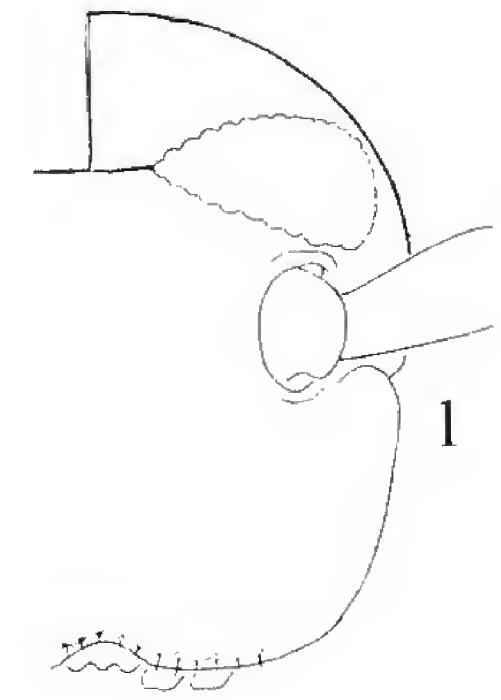
in specimens examined from numerous localities within the species' range, the possibility of salvaging *phanus* as a subspecies does not seem an option.



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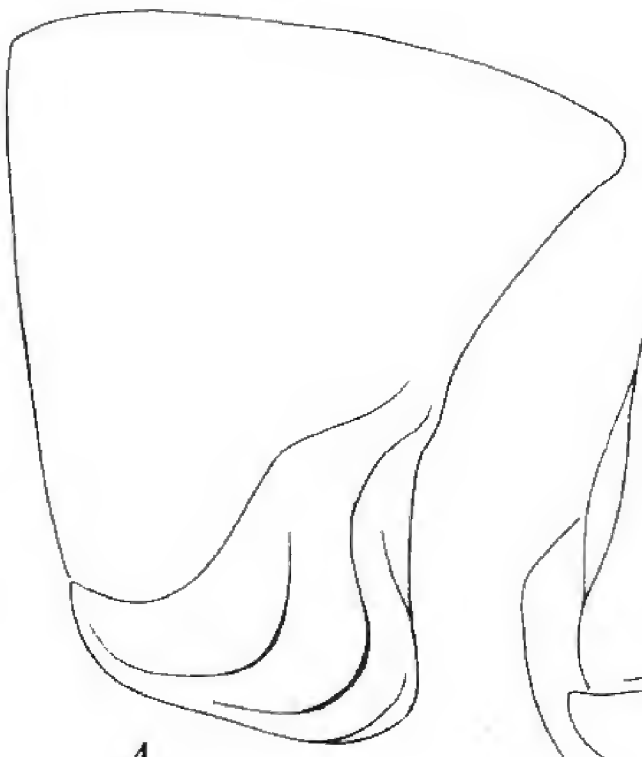

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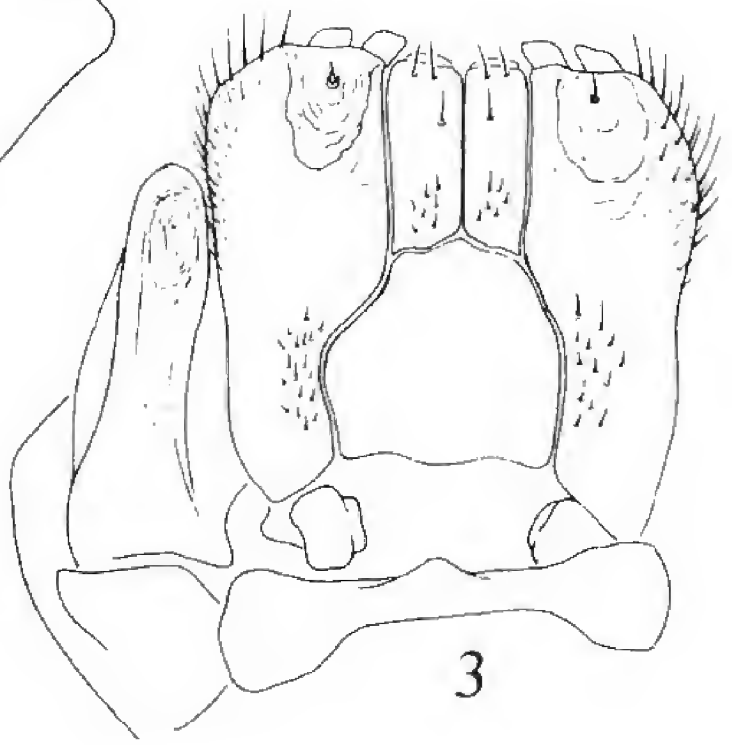

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Figures 1-4. *Eiphorus incertus* (Attems). peripheral characters. 1. Left side of head capsule, frontal aspect, to show large ocellarium and narrow interocellarial space. 2. Distal articles of mandible, showing absence of marginal lobes on the psectromere. 3. Gnathochilarium and base of mandible of right side showing membraneous areas on mandible and stipital sclerites. 4. Right side of collum. Drawings from male paratype of *Eiphorus phanus* Chamberlin.

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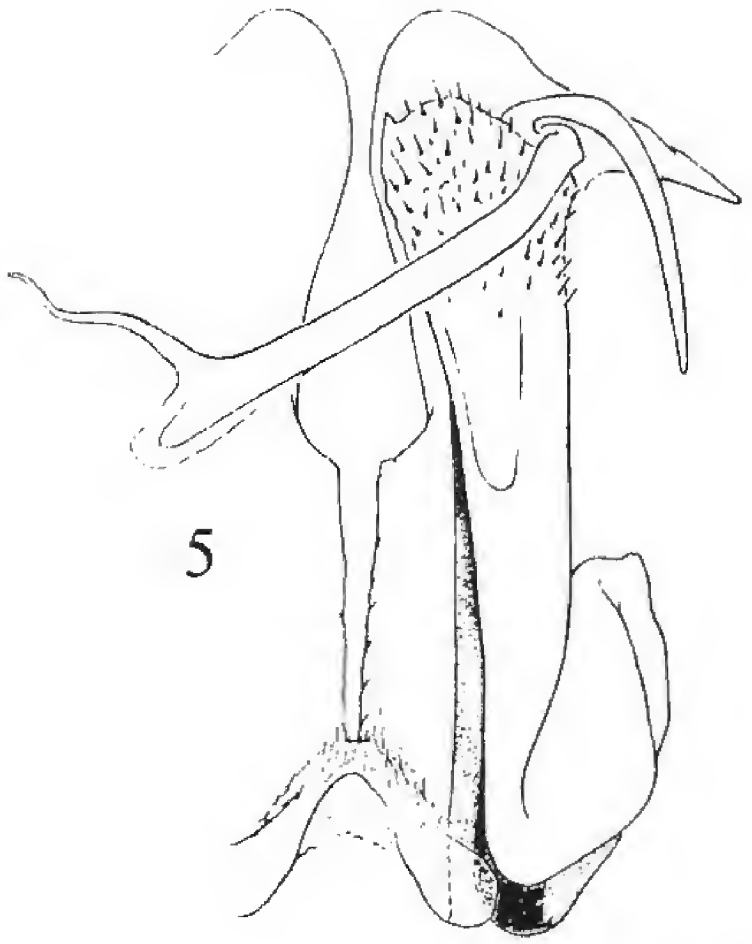

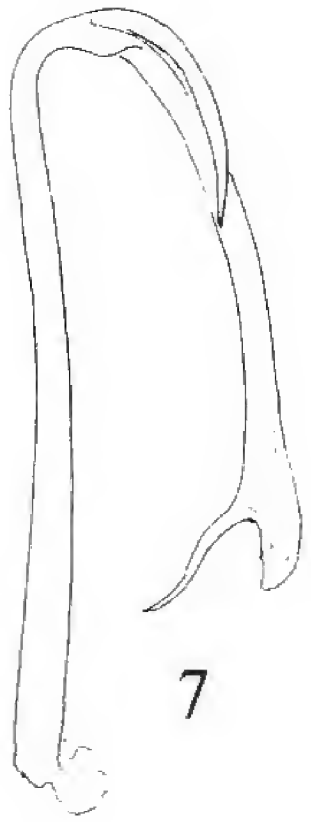

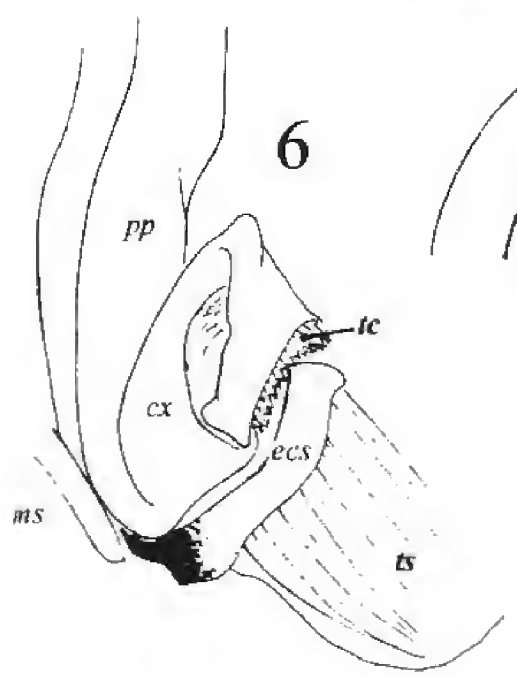

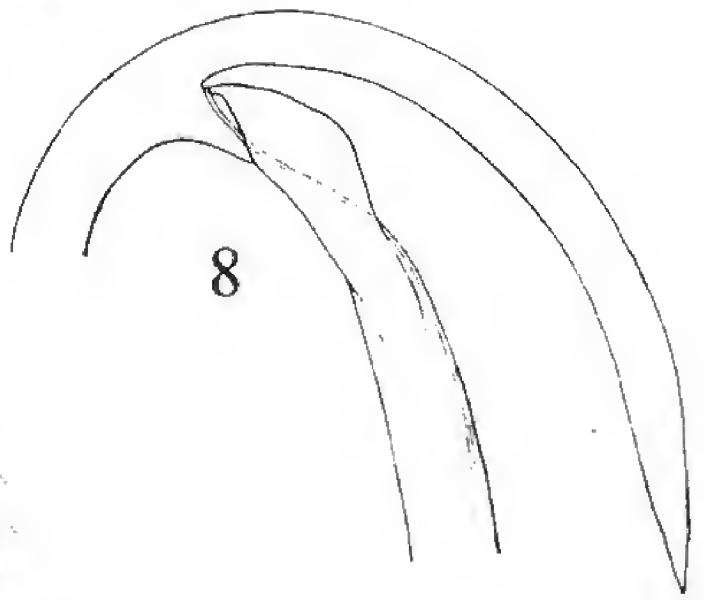

Figures 5-8. *Eiphorus incertus* (Attems), gonopodal characters. 5. Right gonopod, anterior aspect. 6. Basal structures of right gonopod, lateral aspect. 7. Telopodite of right gonopod, anterior aspect. 8. Torsal region of right telopodite, posterior aspect, showing extended torsotope. Abbreviations: *cx*, coxa, *ecs*, ectosternal sclerite, *ms*, mesosternal sclerite, **tc**, tracheocoxal muscle, **ts**, tracheosternal muscle. Base of telopodite where coalesced with ectosternum in black.

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The descriptions given by Chamberlin and Attems are relatively complete and adequate. I can add (see generic diagnosis) only a few details about some characters neglected by my predecessors, and provide some additional drawings to illustrate several of them. All of the localities mentioned under either name are plotted on the map (Fig. 9) to show the rather extensive area occupied by the species. It seems reasonable to assume that it may be discovered in adjoining countries as well (Tanzania, Ruanda, Congo-Brazzaville).

The original description of *incertus* mentioned specimens from Sankuru, Temvo, Boende, Lomani, Mukishi, Kwamouth, and Buseregenye without reference to a holotype. But in 1937, in his list of species known from the Albert National Park, Attems stated "Buserengenye (Luja) (Typ.)", and perhaps it is justified to secure this tenuous indication by selecting a syntype from Buserengenye (Kivu),as **lectotype** of *S. incertus*. At my request, Dr. VandenSpiegel has identified a male specimen from that locality in the Tervuren collection (MRAC 1.806) and attached a lectotype designation which I provided for the purpose.

It is remarkable that until now, nobody working with these animals noticed the absolute identity of the gonopod drawings published for *incertus* and *phanus*.

ACKNOWLEDGEMENTS

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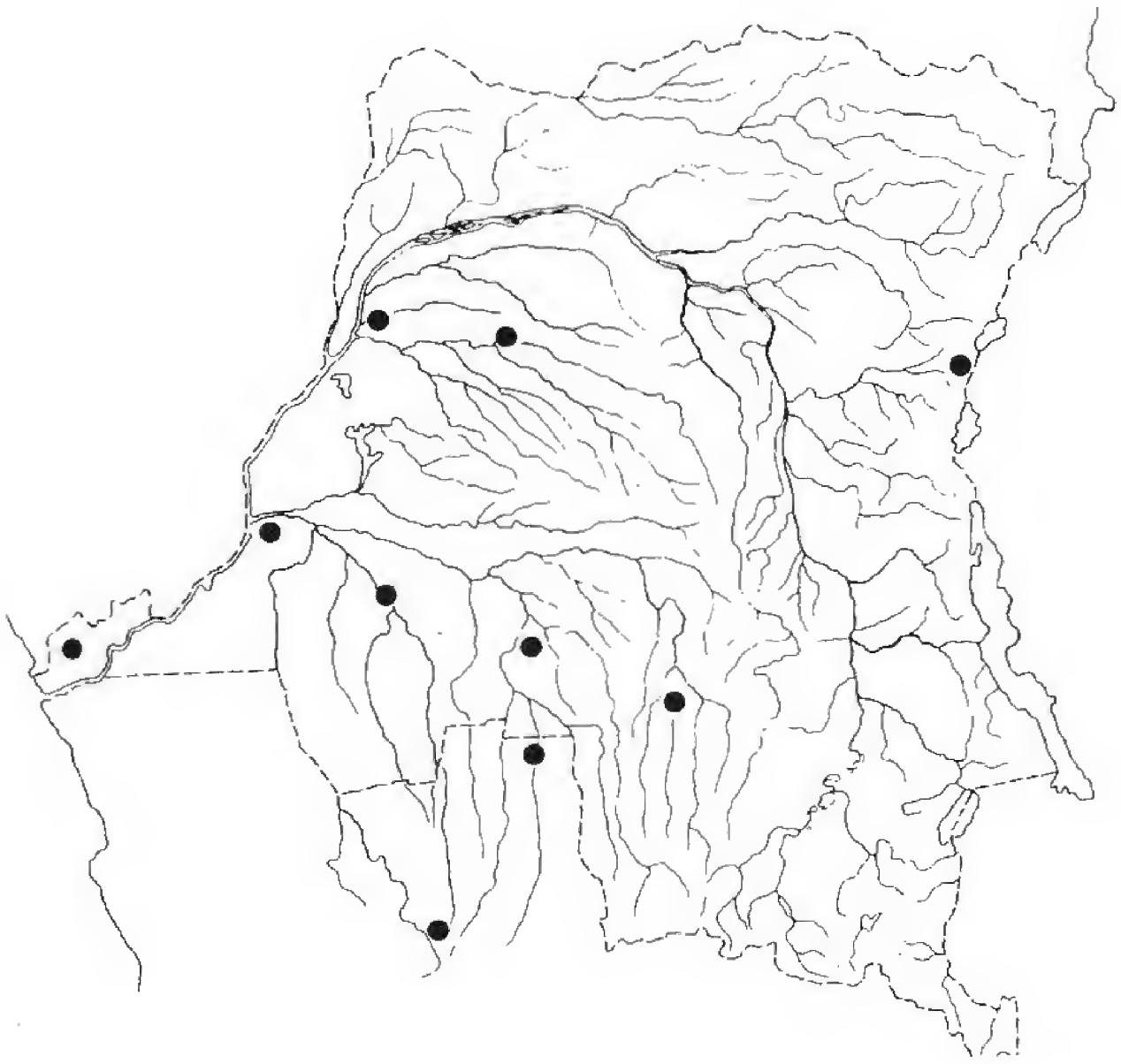

Figure 9. Distribution records for *Eiphorus incertus*, from published data and specimens personally examined.

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